

A STRIKE FOR CHANGE



THE F-35 LIGHTNING II: LATEST ADDITION TO AIR FORCE FLEET

STORY BY STAFF SGT. MATTHEW BATES



F-35 Joint Strike Fighter Lightning II test aircraft AA-1 undergoes flight testing over Fort Worth, Texas. An airborne networking team at Hanscom Air Force Base, Mass., is working to connect low-observable aircraft such as the F-22 Raptor, F-35 and B-2 Spirit with each other, and with the rest of the force.

There's a lot of buzz surrounding the F-35 Lightning II. One look is all people need to see why. Commonly referred to as the Joint Strike Fighter, the F-35 contains such a laundry list of high-tech gadgets and never-before-seen capabilities that it sends computer geeks into a frenzy of excitement. Aviation enthusiasts froth at the mouth when speaking of the F-35 and pilots everywhere dream of flying this new fighter aircraft.

But, these air and desk jockeys will all have to wait. The F-35 is not operational.

Yet.

"We expect the F-35 to be operationally capable by 2013," said Col. Gary Cooper II, F-35 combined test director.

Developed by Lockheed Martin Aeronautics Company, the F-35 is single-engine fighter designed to be an affordable, state-of-the-art replacement for air-to-ground aircraft such as the Navy's F/A-18 Hornet, A-10 Thunderbolt II and the F-16C Fighting Falcon.

It has improved combat maneuverability over present fighters, it has increased range and the heads-up display is not viewed in the cockpit but inside the pilot's helmet visor.

This may sound like the stuff of science fiction, but it isn't.

It's the reality of combat aviation.

Its capabilities make the F-35 a much anticipated aircraft. For people involved with the production and testing of the fighter, this eagerness must be tempered with patience.

They won't be pushed, bullied or bartered into making the F-35 operational even one second before they know it should be. The program, and making sure it's done right are just too important.

"We've got to get the testing right," said Maj. Gen. Stephen T. Sargeant, AFOTEC commander at Kirtland Air Force Base, N.M. "We want to make sure this aircraft is 100 percent ready when we deliver it to the fleet."

To do this, the F-35 team is using all the resources at its disposal.

"We're using lessons learned from the F-22 (Raptor) and other aircraft and incorporating them into this program to make it as successful as possible," said Colonel Cooper.

The similarities between the F-35 and F-22 programs are many. They are both fifth generation fighters, they both use the latest and greatest technology and they both are surrounded in an air of mystery.

But there is one striking difference.

The F-35 isn't only being produced for the U.S. Air Force, it's a joint fighter and it's being produced for the Air Force, the Navy,



An F-35 Lightning II is constructed on the assembly line at the Lockheed Martin Aeronautics Company in Fort Worth, Texas. The aircraft will receive embedded antennas, aligned edges, internal weapons and special coatings and materials, the F-35 is able to pick and choose engagements, while remaining virtually undetected by enemy defense systems or aircraft.

Jeff Knowles, a Lockheed Martin test pilot, wears the helmet-mounted display system for the F-35 Lightning II Joint Strike Fighter. The helmet provides the Lightning II pilot with a binocular-wide field-of-view utilizing integrated day and night capabilities with sensor fusion and highly accurate head tracking hardware.

photo by Darin Russell

An F-35 Lightning II (middle) and F-16 Fighting Falcons fly to Edwards Air Force Base, Calif. The Lightning II features the most powerful integrated sensor package of any fighter aircraft to date. This package allows the pilot to see a 360-degree view of the battlefield, meaning they have unparalleled information gathering capabilities.



the Marines and eight partner nations, including Great Britain, Australia and the Netherlands.

Having so many nations using the same aircraft means greater support capabilities and initial involvement in the design, development and testing of the JSF.

"This is the first time a program like this has been undertaken," said Royal Air Force Wing Cmdr. Chris Forrester, who is part of a team from Great Britain working on the F-35 program. "This aircraft is a joint endeavor in the truest sense. You have various military and

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civilian agencies all working together to create a modern system we all will use. It's really quite exciting."

There's a lot to be excited about. The program is advancing rapidly and its teams already know their work is paying off. The F-35 has flown several successful test flights, the first of which took place in December of 2006.

"Overall, I was impressed by how well the entire first flight came together," said Jon Beesley, Lockheed Martin's chief test pilot for the F-35. "The test team told me I taxied out to the end

of the runway much faster than I did for any of the taxi tests. But I was ready to go and so was the airplane. And it was a thrill to fly."

Much of this is due to the fighter's advanced avionics, advances that give the F-35 greater agility and the ability to outperform opposing forces with unmatched aerial maneuvering.

"This is the first real electric jet," Beesley said. "The flight control actuators, while they have internal closed-loop hydraulic systems, are controlled and driven by electricity, not hydraulics.



The F-35 Lightning II Joint Strike Fighter program's Cooperative Avionics Test Bed is specially modified to perform mission systems testing for the F-35 program and accommodates the full array of avionics that will be installed on an F-35.

The F-35 is the only military aircraft flying with such a system."

The F-35 isn't just agile. It's also stealthy. With embedded antennas, aligned edges, internal weapons and fuel, and special coatings and materials, the F-35 is able to pick and choose engagements, while remaining virtually undetected by enemy defense systems or aircraft.

"This ability speaks for itself," Colonel Cooper said. "Having an aircraft that's hard to see means it's more survivable and more lethal."

And, even though the enemy can't see it, the F-35 can definitely see them. The Lightning II features the most powerful integrated sensor package of any fighter aircraft to date. This package allows pilots to see a 360-degree view of the battlefield, meaning they have unparalleled awareness and information gathering capabilities.

The F-35 is being produced in three different versions: A conventional takeoff and landing variant, a short takeoff, vertical landing variant and a variant that is able to takeoff and land on an aircraft carrier.

With all of its revolutionary advancements, the F-35 combines the capabilities of the A-10, the F/A-18, the F-16, the AV-8B Harrier and the F-117 Nighthawk into one fifth generation, multi-role fighter.

It's almost like flying a computer.

But, nothing about this sophisticated aircraft is a game. It's all business, and its business is keeping the Air Force a dominant air power far into the future. 🦅



Maj. Gen. Steve Sargeant, the Air Force Operational Test and Evaluation Center commander, takes the stick of an F-35 Lightning II Joint Strike Fighter simulator to get a sneak peak of the advanced capabilities of the F-35 at the Lockheed Martin Aeronautics, Fort Worth, Texas.

EVALUATING THE SERVICE'S FUTURE

AFOTEC ENSURES NEW WEAPONS, TECHNOLOGIES MEET WARFIGHTER'S NEEDS

The men and women at the Air Force Operational Test and Evaluation Center, located at Kirtland Air Force Base, N. M., do just what their organization's name says. For more than 30 years, they have tested and evaluated new weapon systems or technologies that are introduced to the Air Force.

These tests reduce the risks associated with new technologies and make sure they deliver what they say they can in the least amount of time and as cheap as possible.

"AFOTEC is in the right place at the right time to provide the right information to senior acquisition decision makers and the warfighter," said Maj. Gen. Stephen T. Sargeant, AFOTEC commander. "Our pri-

mary purpose is to support America's fighting forces whose mission is to defend and protect the United States."

AFOTEC specialists are developing a new technology process – from concept to system fielding – and strive to be involved with these programs as early as possible.

"We believe this approach to testing influences a program in a relevant, operational and testable manner," General Sargeant said. "We believe in early influence so that we maintain an operational focus to ensure our combatant commanders have the right tools to win today's and tomorrow's battles."

Once AFOTEC engineers assess a project and determine its feasibility, there are several phases that follow. These include system development and demonstration phase, production and deployment phase and operations and support phase. During each phase, the project undergoes several tests it must pass before placement in the next phase.

"Properly testing systems means they will meet the threats the men and women of the military face every day," General Sargeant said.

AFOTEC currently operates five detachments and 12 operating locations across the United States.

By Staff Sgt. Matthew Bates